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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,687	06/19/2001	Steve K. Hsiung	5201-2430001-120	6374

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EXAMINER	
NGUYEN, TRUNG Q	
ART UNIT	PAPER NUMBER
2829	

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/885,687	Applicant(s) HSIUNG ET AL.	
	Examiner Trung Q Nguyen	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following minor informalities: change "172" to --171-- on page 11 line 2.

Appropriate correction is required.

Drawings

2. The drawings are objected to because Figures 1A-1D are sectional views, but they are not crosshatched. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lum et al. (U.S. 5,534,784).

As to claim 1, Lum et al. disclose in Figure 2 a test fixture comprising a table moveable 62 in a first direction, wherein the table is adapted to secure a substrate 64

embodying a trace conductor having opposing ends 80; a probe pin movable 68 in two direction perpendicular to the first direction, wherein the probe pin is adapted to contact a first one of the opposing ends via contact points 80.

As to claims 2-3, Lum et al. disclose in Figure 2 and column 4, lines 53-60 a probe needle 84 adapted to contact a second one of the opposing ends 54 wherein a test device not shown will receive signals from these needles.

As to claim 4, Lum et al. disclose in Figure 2 a probe pin 68 moves along axes parallel to and perpendicular to a planar surface on which first one of the opposing ends 80 is arranged for contacting an upwardly extending distal end of the probe pin via contacting point of 84.

As to claims 5 and 12, Lum et al. disclose in Figure 2, column 1, lines 15-20 and column 3, lines 35-50, a test fixture comprising a pin retainer 66 for retaining an upwardly extending pin 88, a semiconductor substrate retainer 62 having a trace conductor 70 with one end of the trace conductor 74 arranged above the pin 78; and a mechanism for moving the pin retainer 66 and semiconductor substrate in two dimensions for aligning the proper pin 84 onto one end of the trace conductor 74.

As to claims 6 and 15, Lum et al. disclose in Figure 2 and column 4, lines 55-67, an end opposite one end of the trace conductor 80 is adapted to receive a probe needle

84, and wherein a test device not shown is coupled between the probe needle and the pin to produce the test result.

As to claims 7-8, Lum et al. disclose in Figure 2 wherein the test device not shown (column 4, lines 55-67) forwards stimuli and receives response during use for testing integrity, open or short circuit of the trace conductor.

As to claim 9, Lum et al. disclose in Figures 1-2, a table 24, a pair of elongated walls 22 secured to the table and extending orthogonal to each other; a push plate 66 of Fig. 2 slideably attached to the table 62 of Fig. 2 for securing the substrate 64 of Fig. 2 on to the table between the push plate and the pair of elongated walls 22 of Fig. 1.

As to claim 10, Lum et al. disclose in Figure 2, a push plate 66 is secured in position upon the table by a thumbscrew secure pin via secure pins 88 and 89.

As to claim 11, Lum et al. disclose in Figure 2, a first lead screw 89 extend the pin retainer 66, a second lead screw 89 extends against the semiconductor substrate retainer 62.

As to claim 13, Lum et al. disclose in Figure 2 a method for testing a semiconductor package moving a substrate 64 bearing a downwardly extending terminal end of a trace conductor 80 along an x-axis, moving upwardly via 68 extending

pin 84 along a y-axis and a z-axis to make contact with the downwardly via 64 extending terminal end.

As to claim 14, Lum et al. disclose in Figure 3, removing at least a portion of an integrated circuit 74 to an upper surface of the substrate 78; and holding the substrate on a moveable table 62 and 66 for exposing a backside surface of the substrate 80 bearing the downwardly extending terminal end to the upwardly extending pin 84.

As to claims 15-16, Lum et al. disclose in Figures 2, 7 and column 6, lines 8-40, contacting probe needles 84 to an upwardly extending terminal end 80 of the trace conductor opposite the downwardly extending terminal end 74; applying electrical stimulus to the probe needle and the pin and measuring a response.

As to claim 17, Lum et al. disclose in Figure 7 and column 4, lines 55-67, measuring electrical resistance of the trace conductor 109 between the probe needle and the pin.

As to claims 18-19, Lum et al. disclose in Figures 1-2, 7 and column 4, lines 55-67, holding comprises retaining the outer periphery 66 of Fig. 2 of the substrate 64 above the table by securing opposed outer portions of the substrate between a moveable sliding push plate and elongated wall 22 and mounted to the table 62,

removing comprises grinding the integrated circuit via exchanged substrate 64 when it fail or finish the test.

As to claim 20, Lum et al. disclose in Figure 7 and column 6, lines 1-11, contacting the probe needle comprises using a magnifying lens for aligning and contacting the probe needle via guide pins 88 may extend through guide holes 89 both within mounting plate 66 and probe card 62 to insure proper alignment between the various components of array probe assembly 60.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. As already mentioned, there are a number of prior art references dealing with the use of device under test board and testing method; only a representative sample is cited herein.

Dahl (U.S.6,051,888) discloses a semiconductor package and method for increased thermal dissipation of flip-chip semiconductor package.

McCormick et al (U.S. 5,909,057) discloses an integrated heat spreader/stiffener with apertures for semiconductor package.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Nguyen whose telephone number is 703-305-4925. The examiner can normally be reached on Monday through Friday, 8:30AM – 5:00PM. The fax phone numbers for the organization where this application or

proceeding is assigned are 703-308-5841. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached at 703- 308-1680.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

TN
October 18, 2002

KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
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